



## A PROSPECTIVE STUDY ON COMPARISON OF VPSS WITH IPSS IN ASSESSING MEN WITH LUTS IN NORTHERN DISTRICTS OF TAMILNADU POPULATION

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**ABSTRACT** The International Prostate Symptom Score (IPSS) used to assess the lower urinary tract symptoms (LUTS). In Northern districts of Tamilnadu, we receive many patients with low educational levels, which makes it difficult for them to understand the questionnaire. The visual prostate symptom score (VPSS) overcomes these barriers. **Objectives:** To correlate the VPSS score with the IPSS, in patients with LUTS. **Material And Methods:** A prospective study was performed in 250 men of 40 years of age or older with LUTS, between September 2023 to August 2024, who attend the Institute of Urology, Rajiv Gandhi Govt General hospital to determine the prevalence of patients requiring assistance in answering both instruments. The correlation between the IPSS and VPSS and the Qmax of these patients will be evaluated. Uroflowmetry was performed and the VPSS and IPSS were applied to them, identifying those who required help to answer the questions. Chi-square test used for categorical data analysis, Kruskal Wallis test used for nonparametric data analysis, and Spearman's test used for correlation analysis. Statistical analysis performed with IBM SPSS Statistics software. **Results:** 250 men with LUTS were included. The mean age was 62 (42-78). 44% (n=110) of patients were able to answer the IPSS, and 81.6% (n=204) were able to answer the VPSS. A significant correlation was found between total VPSS and total IPSS ( $r=0.63, p<0.001$ ). A significant correlations were found between VPSS and Qmax ( $r=-0.61, p<0.001$ ), and IPSS and Qmax ( $r=-0.67, p<0.001$ ). **Conclusions:** The VPSS is a alternate useful tool in the assessment of LUTS, as it correlates with the IPSS. It also overcomes the barriers of language and educational level.

**KEYWORDS :** Lower urinary tract symptoms (LUTS), Visual Prostate Symptom Score (VPSS), International Prostate Symptom Score (IPSS)

### INTRODUCTION

Lower urinary tract symptoms (LUTS) are prevalent in men, particularly as they age, and significantly impact quality of life. LUTS encompass a range of urinary issues including frequency, urgency, weak stream, nocturia, and incomplete bladder emptying. As the global population ages, the clinical and economic burden associated with managing LUTS is expected to increase<sup>1</sup>. Consequently, accurate assessment of these symptoms is crucial for effective diagnosis, treatment planning, and monitoring of treatment efficacy.

To evaluate LUTS, clinicians have traditionally used standardized assessment tools that quantify symptom severity and patient experiences. Among these, the International Prostate Symptom Score (IPSS) has been widely recognized and employed for over two decades. Developed by the American Urological Association, the IPSS is a validated, seven-question instrument that scores the frequency and severity of urinary symptoms. It is simple to administer, interpretable, and has been extensively validated, making it the gold standard in clinical practice for assessing LUTS.

However, recent studies have highlighted certain limitations of the IPSS. Being a text-based tool, it relies heavily on patients' literacy levels, comprehension, and language skills, which can be challenging in settings with diverse populations or in older patients who may struggle with reading<sup>2</sup>. The reliance on subjective interpretation of verbal questions also raises concerns about consistent understanding across various demographic groups, potentially affecting the reliability of the IPSS scores in some patient cohorts.

In response to these limitations, the Visual Prostate Symptom Score (VPSS) was introduced as an alternative tool. The VPSS is a pictorial-based questionnaire designed to assess LUTS in men with varying literacy levels. It consists of visual depictions for four key symptoms: urinary frequency, nocturia, weak stream, and urgency<sup>3</sup>. The visual nature of the VPSS allows patients to identify their symptoms through images, potentially improving accessibility and understanding. Preliminary research suggests that VPSS may offer comparable or even superior sensitivity to LUTS severity,

particularly among populations with low literacy, while also reducing the variability in patient interpretation.

This thesis presents a comparative analysis of the VPSS and IPSS in assessing LUTS among men. By comparing these tools, this research aims to explore the relative effectiveness, reliability, and patient usability of the VPSS in contrast to the IPSS. Through this comparison, the study will assess whether the VPSS can serve as a viable alternative, especially for populations where literacy may hinder IPSS usage. Furthermore, the thesis will investigate the correlation between VPSS and IPSS scores, exploring if the VPSS could potentially complement or replace the IPSS in routine clinical assessments.

### MATERIALS AND METHODS

This study was conducted at Institute of urology, Rajiv Gandhi Government General Hospital, Chennai for a period of 1 year from September 2023 to August 2024. A total of 250 patients were included in this study and they were separated into 2 groups as less than 8<sup>th</sup> class and more than 8<sup>th</sup> class. Data were collected prospectively. Inclusion criteria of Male patients older than 40 years with the chief complaint of LUTS were selected. Exclusion criteria was patients with indwelling urethral or suprapubic catheter, UTI, and a history of past urological surgery and those who were visually impaired and hard of hearing were excluded from our study.

Standard demographic data such as age, level of education were recorded. All patients underwent standard clinical examination and were requested to complete the IPSS (Fig.1) and VPSS (Fig.2). Patients who need assistance when answering the questionnaires were noted and thus assisted by a physician. Maximum urinary flow (Q max), average urinary flow (Qave), and voided volume (VV) were measured using vTitan-Accuflow Uroflowmetry Device. PVR was measured using ESAOTE Ultrasound Scanner using a convex array transducer. Chi-square test used for categorical data analysis, Kruskal Wallis test used for nonparametric data analysis, and Spearman's test used for correlation analysis. Statistical analysis performed with IBM SPSS Statistics software. A P value of <0.05 was considered statistically significant.

**International Prostate Symptom Score (I-PSS)**

Patient Name: \_\_\_\_\_ Date of birth: \_\_\_\_\_ Date completed: \_\_\_\_\_

In the past month:	Not at All	Less than 1/2 Times	Less than Half the Time	About Half the Time	More than Half the Time	Almost Always	Total score
1. Frequency How often have you had the need to urinate (empty your bladder)?	0	1	2	3	4	5	
2. Frequency How often have you had to urinate less than every two hours?	0	1	2	3	4	5	
3. Intermittency How often have you found your urinary stream stopped and started again several times while you urinated?	0	1	2	3	4	5	
4. Urgency How often have you found it difficult to postpone urination?	0	1	2	3	4	5	
5. Weak Stream How often have you had a weak urinary stream?	0	1	2	3	4	5	
6. Straining How often have you had to strain to start urination?	0	1	2	3	4	5	
Score: 1-7: Mild      8-19: Moderate      20-35: Severe							

**Quality of Life Due to Urinary Symptoms**

If you were to spend the rest of your life with your urinary conditions just the way it is now, how would you feel about that?

Original	Planned	Minor Interfered	About	Major Interfered	Unbearable	Terrible
0	1	2	3	4	5	6

Fig.1

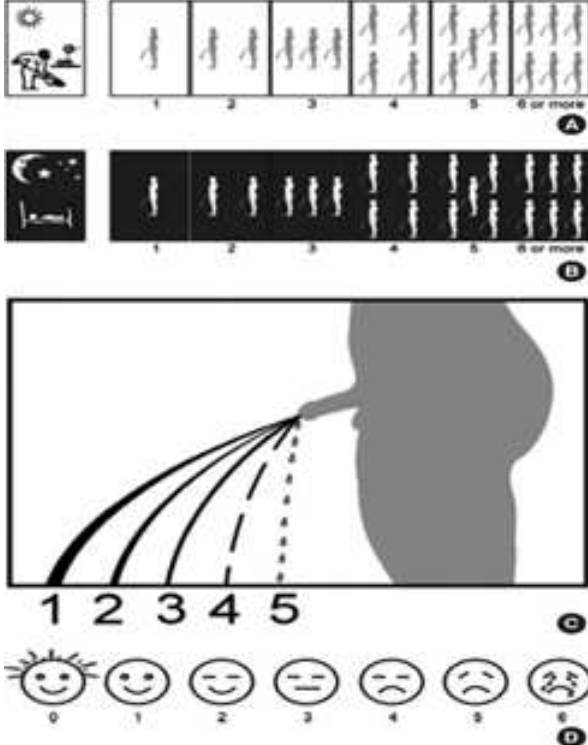


Fig.2

**RESULTS**

The characteristics of the patients included in this study are presented in Table 1.

**Table 1 : Patients Characteristics.**

Characteristics	Value
Age (yr)	62 (40 – 78)
Literacy level	
Class < 8	134/250 (53.6%)
Class > 8	116/250 (46.4%)

In our study patients' mean age was 62 years (range, 42 - 78 years). All our patients were divided into 2 groups based on their literacy level. Patients with education level < 8<sup>th</sup> class were included in Group A and those with education level > 8<sup>th</sup> class in Group B. Around 53.6% of patients had education level < 8<sup>th</sup> class and 46.4%

of patients had education level > 8<sup>th</sup> class.

The no. of patients who completed IPSS and VPSS questionnaire are presented in Table 2

**Table 2 : Comparison Of Literacy Level In Completing The IPSS And VPSS Questionnaire.**

Level of Education	Require Assistance			
	IPSS		VPSS	
	Yes	No	Yes	No
Class < 8 (134)	107	27	35	99
Class > 8 (116)	33	83	11	105

Relationship between level of education and assistance required to complete the IPSS and VPSS questionnaires are presented in Table 3.

**Table 3 : Relationship Between Level Of Education And Assistance Required To Complete The IPSS And VPSS Questionnaires**

Level of Education	IPSS assistance	VPSS assistance	P-value
Class < 8 (134)	107/134	35/134	<0.001
Class > 8 (116)	33/116	11/116	<0.001

Of all participants, 44 % (n 110) did not require assistance when answering the IPSS, whereas 81.6 % (n 204) did not require assistance when answering the VPSS. The IPSS questionnaire was completed with assistance by 107 of 134 men (79.8%) with low level of education compared with 33 of 116 men (28.4%) with high level of education (P < 0.001). On the other hand, the VPSS questionnaire was completed with assistance by 35 of 134 men (26.1%) with low level of education compared with 11 of 116 men (9.5%) with high level of education (P < 0.001). These results are shown in Tables 2 and 3.

Both the questionnaires were evaluated for correlation. All the results are summarized in Table 4. The IPSS total score was significantly correlated with the VPSS total score (r, P value: 0.63, <0.001). The IPSS QoL was significantly correlated with the VPSS QoL (r 0.59, P < 0.001). Both total IPSS and total VPSS showed a negative correlation with Qmax: IPSS total versus Qmax (r -0.67; P < 0.001) and VPSS total versus Qmax (r -0.61; P < 0.001).

The IPSS Q2 (frequency), Q5 (weak urinary stream), and Q7 (nocturia) were significantly correlated with their corresponding VPSS questions: Q1, Q3, and Q2 (r 0.46, P < 0.001; r 0.71, P < 0.001; and r 0.86, P < 0.001, respectively).

Both the IPSS question 5 (Q5, weak urinary stream) and corresponding VPSS Q3 were significantly correlated with Qmax (r -0.73, P < 0.001 and r -0.28, P < 0.001, respectively).

The total IPSS storage score (questions 2, 4, and 7) and voiding score (questions 1, 3, 5, and 6) were significantly correlated with the total VPSS storage and VPSS voiding score (r 0.64, P < 0.001 and r 0.52, P < 0.001, respectively).

**Table 4 : Correlation Between Various International Prostate Symptom Score (IPSS), Visual Prostate Symptom Score (VPSS), And Uroflowmetry Parameters.**

IPSS and VPSS parameters	Correlation coefficient (r)	P-value
IPSS total score-VPSS total score	0.63	<0.001
IPSS QoL-VPSS QoL	0.59	<0.001
IPSS total score-Qmax	-0.67	<0.001
VPSS total score-Qmax	-0.61	<0.001
IPSS Q2-VPSS Q1	0.46	<0.001
IPSS Q5-VPSS Q3	0.71	<0.001
IPSS Q7-VPSS Q2	0.86	<0.001
IPSS Q5-Qmax	-0.73	<0.001
VPSS Q3-Qmax	-0.28	<0.001
IPSS storage score-VPSS storage score	0.64	<0.001
IPSS voiding score-VPSS voiding score	0.52	<0.001

(IPSS, International Prostate Symptom Score; IPSS Q2, IPSS question 2 (frequency); IPSS Q5, IPSS question 5 (weak urinary stream); IPSS Q7, IPSS question 7 (nocturia); IPSS storage score,

sum of IPSS scores from question 2, 4, and 7; IPSS voiding score, sum of IPSS scores from question 1, 3, 5, and 6; Qmax, maximum urinary flow rate; QoL, quality of life; VPSS, Visual Prostate Symptom Score; VPSS storage score, sum of VPSS scores from question 1 and 2; VPSS voiding score, score from VPSS question 3. r: Spearman's correlation coefficient.)

## DISCUSSION

The IPSS has been utilized as a means to evaluate LUTS in male patients. The questionnaire comprises seven items that cover storage/irritative symptoms, voiding/obstructive symptoms, and postmicturition symptoms. Additionally, there is a question assessing the quality of life included in the questionnaire. It is intended to be filled out by patients independently, without the need for help from a physician or nurse<sup>2</sup>. Research has indicated that illiteracy and low educational attainment pose significant challenges for administering the questionnaire. Patients with only a basic education (less than grade six) may struggle to understand the questions presented in the IPSS. Such patients might misinterpret the questionnaire, resulting in inaccurate scores and possibly leading to unsuitable care. A more accessible alternative, the VPSS (Stellenbosch University), tackles the issue of misinterpretation by incorporating pictograms to visualize each question. Furthermore, this study revealed that language did not pose a barrier to completing the questionnaire. Misunderstanding of the IPSS questionnaire may also stem from limited numerical literacy<sup>3,4</sup>. This challenge of numerical illiteracy might be circumvented with an alternative questionnaire such as the visual analog scale IPSS. However, the alternative questionnaire did not address comprehension issues.

In our investigation, more than half of the participants had a low level of education, with most having completed only eight years of formal schooling (primary education). When compared to those with higher levels of education, a greater number of individuals from this group required help in filling out the IPSS questionnaire. On the other hand, while completing the VPSS questionnaire, most individuals from both groups were similarly able to finish it independently. Our findings corroborated earlier studies<sup>5,6</sup>. The VPSS was designed to assist illiterate or poorly educated men who found the IPSS challenging, by transforming the questions into straightforward diagrams<sup>7</sup>. Our study's outcomes aligned with previous research suggesting that the VPSS may serve as a viable alternative tool for assessing LUTS in populations with varied educational, cultural, or linguistic backgrounds, particularly for those who are illiterate and those with limited education. Selekmán et al<sup>8</sup> determined that the questionnaire was more effective than the IPSS in evaluating LUTS patients, especially among those with limited education and literacy. Similarly, a recent investigation in India by Taneja et al<sup>9</sup> indicated that the VPSS could be completed by most individuals with lower educational levels. An earlier study in Namibia<sup>10</sup> suggested that, aside from illiteracy, language was not an obstacle in completing the VPSS questionnaire.

A research conducted by Ceylan et al<sup>11</sup>, which analyzed two questionnaires in Turkish individuals, revealed that the VPSS was more dependable than the IPSS among patients with lower educational levels and among elderly individuals who struggle to read small text on the IPSS. Our research did not include patients with visual impairments (including those with issues related to visual acuity) since these individuals were already excluded from our study. The findings indicated strong correlations between the total IPSS and VPSS scores, as well as between their respective individual scores (questions related to frequency, nocturia, and urinary stream), and the QoL scores. Our study's findings aligned with those of prior research.

Furthermore, akin to earlier studies, the uroflowmetry parameter Qmax (maximum urinary flow rate) showed a significant correlation with both question 5 of the IPSS and its corresponding question 3 of the VPSS. This suggests that, similar to the IPSS, the VPSS might be utilized for assessing the urinary stream<sup>12,13</sup>. Wessels et al. employed the VPSS to evaluate LUTS in patients suffering from urethral stricture disease, finding that the VPSS had notable correlations with the IPSS, Qmax, and urethral diameter<sup>14</sup>. Additionally, the VPSS generally requires less time to fill out compared to the IPSS. Park et al. determined that the VPSS could be advantageous in assessing LUTS during initial consultations and follow-up appointments<sup>15</sup>. The limitation of our research was that

our participants came from various educational backgrounds. Moreover, we included all patients whose primary complaint was LUTS, which may be attributed to conditions such as benign prostatic hyperplasia, stricture, overactive bladder, etc. Therefore, the implementation of our study findings in clinical practice should be approached cautiously. The innovative questionnaire may serve as a valuable clinical instrument for the routine evaluation of treatment, initial assessments, and follow-up for patients with LUTS, particularly those with lower educational levels.

## CONCLUSION

In evaluating men with lower urinary tract symptoms (LUTS), the International Prostate Symptom Score (IPSS) and Visual Prostate Symptom Score (VPSS) each offer distinct advantages and face specific limitations. The IPSS provides a comprehensive, validated approach that captures a wide range of LUTS, making it ideal for detailed assessments and research. However, its reliance on literacy and complexity may limit its use in certain populations. The VPSS, with its visual, simplified structure, is more accessible to patients with low literacy and allows for quicker assessments, particularly in resource-limited settings. The VPSS was significantly correlated with IPSS and Qmax. The VPSS questionnaire proved to be useful as an alternative tool for IPSS in assessing men with LUTS, especially for those with lower level of education.

**Conflicts Of Interest** None.

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